Chicago & North Western Railway Bridge No. 128
(Tiffany Stone Bridge)
Spanning Turtle Creek, on the Chicago & North Western Railway Line
Tiffany
Rock County
Wisconsin

HAER No. WI-24

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
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HISTORIC AMERICAN ENGINEERING RECORD

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(Tiffany Stone Bridge)

HAER No. WI-24

Location:	Spanning Turtle Creek, on the Chicago & North Western Railway line, Tiffany, Rock County, Wisconsin UTM: 16.342180.4715840 Quad: Shopiere, Wisconsin
Date of Construction:	1869
Builder:	John Watson
Engineer:	Van Mienan
Present Owner:	Chicago & North Western Railway Company
Present Use:	Private railroad bridge
Significance:	The Tiffany Stone Bridge is the oldest remaining stone arch bridge in the State of Wisconsin. It is an excellent representative example of the stonework done by the Chicago & North Western Railway and is, by far, the most impressive stone arch railroad bridge in the State. The bridge was designed by Van Mienan, the chief engineer for the railroad company, who modeled it after a stone arch bridge in Compiegne, France.
Historian:	Lola Bennett Wisconsin Historic Bridge Recording Project July 1987

CHICAGO & NORTH WESTERN RAILROAD

The Illinois & Wisconsin Railroad Company, organized in 1851, built a line from Chicago & Cary, Illinois, approximately 39 miles in a northwesterly direction. At about the same time, the Rock River Valley Union Railroad built a line from Minnesota Junction to Fond du Lac, Wisconsin, 29 miles away. Both lines were completed in 1854 and, in 1855, the two companies consolidated to form the Chicago, St. Paul & Fond du Lac Railroad Company. The purpoess of this newly-formed company was to extend its line from Janesville, Wisconsin, to St. Paul, Minnesota, and Fond du Lac, Wisconsin. This meant completing the line from Cary to Janesville in 1855, thus establishing Shopiere, Wisconsin, as a station on the line. In 1859, there were several consolidations and mergers that created the Chicago & North Western Railway Company, and the line was completed between Janesville and Minnesota Junction. Shopiere was a station on the company's Wisconsin Division, the Chicago to Fort Howard section. The village name of Tiffany does not appear on the company's station lists until 1923, at which time it replaces Shopiere.[1]

During the 1860s, 1870s, and 1880s, construction was going on continuously, until the Chicago & North Western Railroad covered nine midwestern states. In 1867, the line was completed to Council Bluffs, Iowa, 491 miles west of Chicago. This was an event of national significance, because the line constituted the first of three sections in America's first transcontinental rail system. The second section was the Union Pacific Railroad which was built westward from Omaha, across Nebraska, Wyoming and Utah, to meet the Central Pacific Railroad which was constructed eastward from Sacramento.

CONSTRUCTION OF THE BRIDGE

Two years of planning by the Chicago & North Western's chief engineer, Van Mienen, preceded the construction. Van Mienen's design was inspired by Classical stone bridges in France, particularly one at Compiegne.[2] Quarries all over the State were searched for stone of the quality desired by the builders. Limestone was brought from Joliet, Illinois, to form the voussoirs. For foundations and spandrel walls, the company used "Duck Creek" limestone from its own quarry near Green Bay, Wisconsin. Stone from Janesville was used on the walls and solid backing throughout the interior.[3]

The stone was quarried and shipped rough to the site, where it was unloadsd from the railroad cars at the end of the line between Janesville and Turtle Creek. The stone workers, who boarded at farm houses throughout the area, chipped the stone into shape. Loaded onto horse-drawn wagons, it was hauled over the unfinished grade to the bridge site. The arch stones were supported by wooden cribbing as the work progressed. Mortar and pegs were used to secure the blocks into position. Mortar mixing and hauling were done by hand, and the stones were placed with ropes and pulleys. The roadbed across the valley to the bridge was built with fill material cut from the hills above the grads.

Additional fill was dug from the nearby fields, leaving pits still visible on the south side of the bridge. All of the material was hauled by horses and wagons loaded by horse-drawn scoops.[4] The final cost of the bridge at Shopiere was $12,826.34.[5]

DESCRIPTION

The bridge is a five-arch structure, constructed of cut limestone blocks mortared together. The overall length is 387 feet, with each of the arches spanning 50 feet and having a radius of 26.5 feet. The width of the roadbed is 16 feet. The bridge carries the railroad tracks 43 feet above the low water level of Turtle Creek. The voussoirs of the arches rest on three flat stone skewbacks which are notable as being one stone width from face to face of the arch.[6] The abutments below the piers are battered on the downstream side, but on the upstream side they are deeply offset to resist the lateral preesure of the creek.[7] This form of offset, known as a starling, protects the piers by breaking water, ice, and debris.[8] The arches are surmounted by a projecting cornice of limestone blocks in four stepped courses, with the upper course outermost, which continues unbroken along the entire length of the viaduct. The date 1869 is visible on the keystone of the central arch on the upstream side. All of the piers and the north abutment rest on the solid limestone that underlies the streambed. The south abutment rests on a piling. The original timber ice guards that were bolted to the upstream face of the piers for flood protection have been replaced with iron railroad ties. With the introduction of heavier diesel locomotives in the 1930s, the original arches were reinforced with a gridwork of steel rods covered with concrete. At the same time, in 1935, a steel pipe railing was installed on either side of the bridge to replace an earlier post-and-chain railing.[9]

HENRY CRANE

Henry Crane from Janesville was the supervisor on the project. In 1866, Henry Crane was listed in the Janesville directory as a bridge builder. Between 1876 and 1901, he was listed in city directories as a superintendent bridge builder for the Chicago & North Western Railway Company.[10]

JOHN WATSON

John Watson wae a prominent contractor and bridge builder from Janesville. He was born in Cambridgeshire, England, in 1926. At the age of thirteen, he began working on the railroad, and was soon involved in bridge building, and was employed on the railroads until the year he came to America. He lived in Chicago for a year and worked for the Chicago & North Western Railway Company, building bridges and laying the tracks on the old Galena division, between Chicago and Elgin. In the spring of 1850, Watson went to California and spent two years mining for gold. He returned to Chicago in 1852, and was the proprietor of a hotel until 1855, when he moved to Janeeville, Wisconsin.

He worked for a short time building bridges and culverts on the Milwaukee & St. Paul Railroad, and then he began doing contract work. In 1862, he built a railroad bridge and roundhouse at Janesville for the Chicago & North Western Railroad. He built the piers and foundations for the bridges at Racine and Kenosha, some smaller bridges on the Lake Shore division, and the masonry work for the bridges on the line between Janesville and Green Bay. In addition to his railroad work, Watson did considerable town and county bridge building, and work on tunnels and dams.[11]

SIGNIFICANCE

The Tiffany Stone Bridge is the oldest remaining stone arch bridge in the State of Wisconsin. It is still in use today as part of the Chicago & North Western Railroad Line. When it was built, the largest locomotive weighed 43 tons. Modern locomotives weigh upwards of 250 tons. The bridge is, thus, significant as a masonry structure in current use, even though it was built at a time when iron and steel were rapidly superseding stone as a material in railroad bridge construction.[12]

The Chicago & Northwestern Railway, which built the bridge, was the first link in the Transcontinental Railroad system, which spanned the country in 1869. The bridge is an impressive and prominent example of the stone arch bridges that the railroad company built. The bridge is said to be designed after a similar bridge in Compiegne, France.

FOOTNOTES

1 Chicago & North Western Station Lists, from Regional Collection #51: Chicago & North Wsstern Railway (DeKalb, Illinois: Regional History Center, Northern Illinois University).

2 Annie S. McLenegan, Centennial History of the Town of Turtle, Rock County, Wisconsin, 1835-1936 (Beloit, Wisconsin, 1936), p. 24.

3 Ibid.

4 Robert Null, "Century-Old Tiffany Stons Bridge Retains its Beauty and Usefulness," Janesville Gazette. (December 31, 1970).

5 Chicago & North Western Railway Company Annual Report, 1969 (Chicago: Chicago & North Western Railway Company).

6 Chicago & North Western Railway, Wisconsin Division, Bridge No. 128, Shopiere, Wisconsin (plan and elevation), July 26, 1902.

7 Ibid.

8 D. H. Mahan, An Elementary Course of Civil Engineering (New York: John Wiley, 1852), pp. 136-137, 211.

9 Chicago & North Western Railway, Bridge No. 128 (plan and elevation).

10 City Directories, Janesville, Wisconsin (1862-1901).

11 "John Watson," in Portrait and Biographical Album of Rock County, Wisconsin
(Chicago: Acme Publishing Company 1889).

12 Carl W. Condit, American Building: Materials and Techniques from the Beginning of the Colonial Settlsmsnts to the Pressnt (Chicago: University of Chicago Press, 1968), pp. 71-73.